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CITY OF HELENA LANDFILL
LICENSE NUMBER 90

HYDROMETRICS

STATISTICAL EVALUATION OF DECEMBER 1998 GROUNDWATER QUALITY DATA

MARCH 1999

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HYDROMETRICS

FIELD NOTES AND ORIGINAL LAB DATA SHEETS, DECEMBER 1998

FEBRUARY 1999

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HYDROMETRICS

DATA VALIDATION REPORT FOR
GROUNDWATER ORGANIC SAMPLES
COLLECTED IN SEPTEMBER 1998

OCTOBER 1998

IS LOCATED IN THE GROUNDWATER
MONITORING REPORTS ARCHIVE,
BOX NUMBER 4

RECEIVED 11/25/1998

FILE: Lewis & Clark Co
90 City of Helena (inactive)
grd wtr (corresp)

Hydrometrics, Inc.®
consulting scientists, engineers, and contractors

2727 Airport Road
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-1252 E. Bldg.
(406) 443-4155 W. Bldg.
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November 23, 1998

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NOV 24 1998
MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

Ms. Pat Potts
Montana Department of Environmental Quality
Permitting and Compliance Division
WMD / SWP
P.O. Box 200901
Helena, MT 59620

Dear Pat,

Enclosed for your review are the proposed monitoring sites and analytical schedule for the Fall 1998 semiannual groundwater monitoring at the Helena Landfill. Please call if you have any questions or comments.

Sincerely,

Jodi Bingham, E.I.
Environmental Engineer/Chemist

cc: Ted Hill, City of Helena

HELENA LANDFILL

Helena Landfill Fall 1998
SAMPLE SITE AND PARAMETER LIST

SITE NAME	PARAMETERS
Monitor wells (In order to be sampled)	
83-6	Table 1
HL-94-1	Table 1
HL-94-2	Table 1
HL-94-3	Table 1
INF. GALLERY	Table 1 VOC's only
HL-90-3	Table 1
HL-90-3 (Duplicate)	Table 1
I-1	Table 1 VOC's only
MPC-2	Table 1 VOC's only
HL-90-2	Table 1
HL-90-1	Table 1
MPC-1	Table 1
MPC-5	Table 1 VOC's only
EPA-1	Table 1
Residential Wells (well #84 to be sampled by L&C County WQD)	
5	Table 1 VOC's only
13	Table 1 VOC's only
31	Table 1 VOC's only
40	Table 1 VOC's only
52	Table 1 VOC's only
57	Table 1 VOC's only
75	Table 1 VOC's only
84	Table 1 VOC's only
93	Table 1 VOC's only
96	Table 1 VOC's only
DI BLANK	Table 1
RINSATE BLANK	Table 1

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CITY OF HELENA LANDFILL
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HYDROMETRICS

STATISTICAL EVALUATION OF JUNE 1998
GROUNDWATER QUALITY DATA

SEPTEMBER 1998

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file: L+C Co #90
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Corr.

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consulting scientists, engineers & contractors

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Helena, MT 59601
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(406) 443-1252
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RECEIVED
OCT 01 1998
MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

September 30, 1998

Kim Milburn
Public Works Director
City of Helena
316 North Park Ave.
Helena, MT 59623

RE: Minutes of 9/22/98 City of Helena Landfill Methane and Groundwater Remediation Meeting

Dear Kim:

This letter is to transmit the minutes of the September 22, 1998 meeting between the City of Helena and the Montana Department of Environmental Quality (MDEQ) in regards to the City of Helena landfill methane and groundwater remediation.

Attending: Kim Milburn, City of Helena
Ted Hill, City of Helena
Pat Potts, MDEQ
Pat Crowley, MDEQ
Ken Kapsi, MDEQ
Mike Wignot, Hydrometrics, Inc.
Jodi Bingham, Hydrometrics, Inc.

Existing YMCA Gas Extraction System

- Jodi Bingham gave an update of the existing YMCA gas extraction system.
  - Hydrometrics is currently increasing flows in gas extraction wells EW-2, EW-3 and EW-4 to try to further reduce methane concentrations in monitoring probes HL-9, HL-10 and HL-18.
  - A second carbon canister for off-gas treatment to eliminate possibility of discharge after breakthrough in first canister is scheduled for next week. (Installed September 28, 1998.)
- Pat Crowley considers HL-9, HL-10 and HL-18 compliance wells as the YMCA building area was never permitted with the landfill. Pat will send information showing the permitted boundary to Ted Hill for his files.
- Jodi Bingham will prepare a map with all extraction wells, monitoring probes, groundwater sampling wells, etc. She will send a copy to Pat Crowley with October monthly report.

Proposed Carroll College Gas Extraction System

- Jodi Bingham gave an update on the proposed Carroll College gas extraction system.
  - Methane probes along west boundary are being monitored monthly.
  - Hydrometrics presented six alternatives to the City in April and are waiting for Carroll College and the City to work out the property boundary issues before continuing design phase.
- Kim Milburn indicated that the City has been working with Carroll College to try to resolve their differences. In a meeting with Lynn Etchart and Tom McCarvel, a verbal agreement was reached in which the City would regain all the landfilled property (new facility boundary would extend 30 feet west of existing garbage). He will get back in touch with them this week about finalizing the deal.
- Once this issue has been resolved, the design phase can continue.
  - Ted Hill said that their budget for this fiscal year includes the Carroll College gas extraction system.
  - A passive trench and piping with the capability for a future retrofit with a blower, should the need arise, was agreed upon by the City and Pat Crowley as the best option.
  - The City has the option to repermit the landfill to include the Carroll College property; however, reopening the permit is a lot of work and isn't necessary according to Pat Crowley. Pat recommended that the trench be installed and the monitoring probes on the west side of the trench be used as the compliance points, even though they are technically beyond the permitted property boundary.

Groundwater Remediation

- With the YMCA gas extraction system installed and the Carroll College gas extraction system in the works, groundwater remediation is the remaining concern.
- Pat Crowley presented a draft letter stating that with the current gas quality at the YMCA gas extraction system, a global gas extraction system would not improve groundwater quality and another corrective measure should be selected. Pat also noted that a gas sample collected from the Carroll College side may yield different results that could support the use of a global gas extraction system for groundwater remediation.
- Compliance wells MPC-1 and HL-90-1 still exceed the MCL's for perchloroethene (PCE).
- Pat Potts stated that concentrations of PCE in I-4 have been increasing and other wells that have previously been clean now have detectable concentrations. It is her opinion that the plume is spreading.
- The City was given two years to monitor the existing gas extraction system to evaluate the affects on groundwater quality. However, Pat Crowley had previously stated that because the system was not global, the two-year monitoring period did not apply here.

- Alternatives for groundwater remediation included seasonal irrigation and air sparging.
  - Pat Potts suggested the City (Hydrometrics) began modeling the groundwater and investigating the irrigation alternative.
  - The state has GMS (version of Modflow) and would like the input files to double check Hydrometrics' modeling results.
  - Pat Crowley stated that MDEQ was not likely to consider natural attenuation as a remediation alternative.

Schedule

- For compliance of YMCA gas extraction wells (bringing monitoring probes into compliance), Pat Potts thought the two-year period already agreed to was sufficient.
- For the Carroll College gas extraction system, the property issues should be settled and an alternative selected by the end of October with design and construction to be completed by next summer.
- For the groundwater remediation, the groundwater modeling for irrigation well installation and further investigation of the air sparging alternative should be completed by the end of October.
- Another meeting similar to this one was tentatively scheduled for the week of October 26th to discuss the progress on the Carroll College gas extraction system and to present the results of the groundwater modeling.

If you have any questions or comments concerning this summary, please feel free to call me.

Sincerely,

Jodi Bingham, E.I.
Environmental Engineer/Chemist

c: Ted Hill, City of Helena
Pat Potts, MDEQ
Pat Crowley, MDEQ
Ken Kapsi, MDEQ
Mike Wignot, Hydrometrics

CLOSED
CITY OF HELENA LANDFILL
LICENSE NUMBER 90

HYDROMETRICS

ANALYTICAL RESULTS AND FIELD NOTES, JUNE 1998 SAMPLING

AUGUST 1998

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 4

RECEIVED 8/27/1998

File: L+C Co
City of Helena (inactive) #90
grd wtr (corresp)

Hydrometrics, Inc.
consulting scientists, engineers & contractors

2727 Airport Road
Helena, MT 59601
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Fax: (406) 443-4155 or
(406) 443-1252
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RECEIVED
MAY 20 1998
MONTANA
DEPT. OF ENVIRONMENTAL QUALITY
COMMUNITY SERVICES BUREAU

May 19, 1998

Ms. Pat Potts
Montana Department of Environmental Quality
Solid Waste Management Program
Cogswell Building
Capitol Station
Helena, MT 59620

Dear Pat,

Enclosed for your review is a memorandum with the proposed monitoring sites and analytical schedule for the Spring 1998 groundwater monitoring at the Helena Landfill. This sampling schedule includes well 83-7, which will help evaluate the effectiveness of the gas extraction system which is now operational. This was added in accordance with your letter to the City dsated March 3, 1998. Sampling is scheduled for June.

Please call if you have any questions or comments.

Sincerely,

Steven K. Downs, P.E.
Project Manager

c: Mr. Ted Hill, City of Helena

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MEMORANDUM

TO: Dave Sitch
FROM: Steve Downs
DATE: May 15, 1998
RE: City of Helena - Spring 1998 Sampling

Attached is a list of wells which need to be sampled for the Helena Landfill project. We have added well 83-7 to be consistent with commitments made to MDEQ. Please sample each of these wells for the parameters noted below. The monitoring wells should be sampled in the following order:

1) 83-6 2) HL-94-1 3) HL-94-2 4) HL-94-3 5) INF. GALLERY 6) HL-90-3 7) I-1
8) MPC-2 9)HL-90-2 10) HL-90-1 11) MPC-1 12) MPC-5 13) EPA-1 14) WELL 83-7

You will need to get a key from Mike Downs at MPC for well MPC-5. All of the monitoring wells except I-1, Infiltration Gallery, MPC-2 , and 83-7 will be sampled for the entire Table 1 parameter list. These four wells will be sampled only for the VOC's portion of the list. We also need to include a DI blank, a rinseate blank and a duplicate of HL-90-3.

In addition to this sampling, it would be helpful to obtain water level measurements in as many of the wells on the attached list as possible, so that we can produce an accurate potentiometric surface map.

We also need to sample the residential wells denoted on the attached list (except for well #84 which will be sampled by the Water Quality District, please call Vivian Drake at WQD and ask them to sample this well). These wells will be sampled for VOC's only. Below are addresses and numbers for the domestic well owners.

SITE	NAME	ADDRESS	PHONE
31	Dale Gardner	1430 Brady	442-6314
5	Sandra Colvin	350 Custer	443-7463
13	Ed Johnson	102 Oakwood	442-8948
40	Ed Hartman	2509 Teakwood	442-1331
52	Elton Hartze	Custer and Gr. Meadow (trailer court)	443-1622
57	Gwen Francis	112 Dunbar	442-2739
75	Jack Creach	104 Reed	442-1855
93	R. Hecht	932 Aspen	443-5510
96	Ed McHugh	see map	442-0013

Please let me know if you have any questions or if anything is unclear.

P3 2/26/98 INITIALS_

SOLID WASTE OUTGOING CORRESPONDENCE ROUT

☐ **NEW APPLICATION** — Initial / Date
Rick T. _____
Pat C. _____
Nancy (Proof) _____
Cathy _____
Jon D. _____

☐ **NEW LICENSE** — Initial / Date
Rick T. _____
Pat C. _____
Nancy (Proof) _____
Carol _____
Cathy _____
Jon D. _____

☐ **HEALTH OFFICER CARD** — Initial / Date
Rick T. _____
Carol _____
Cathy _____
_____ _____

☐ **INSPECTIONS** — Initial / Date
Pat C. _____
Nancy (Proof) _____
Carol _____
Jon D. _____

☐ **INTERIM CLOSURES** — Initial / Date
Rick T. _____
Pat C. _____
Nancy (Proof) _____
Carol _____
Cathy _____
Jon D. _____

☐ **CLOSURES** — Initial / Date
Rick T. _____
Pat C. _____
Nancy (Proof) _____
Carol _____
Cathy _____
Jon D. _____

☐ **CHANGE IN LICENSE FOR FEE STATUS** — Initial / Date
Rick T. _____
Pat C. _____
Nancy (Proof) _____
Cathy _____

☐ **COMPLAINTS** — Initial / Date
Pat C. _____
Nancy (Proof) _____
Carol (filing & DBase) _____

☑ **GROUND WATER** — Initial / Date
Nancy (Proof) NP 2/26/98
Pat C PFC 3/2

☐ **GENERAL CORRESPONDENCE** — Initial / Date
Pat C. / Rick T. _____
Nancy (Proof) _____
Jon D. (As Needed) _____
Mark Steger Smith (As Needed) _____

☐ **MISCELLANEOUS** — Initial / Date
_____ _____
mailed NP 3/3/98
_____ _____

☐ **FILE** SW/L&C.CO\L&CHEL.QTR
Lewis & Clark Co

F:\USR\CB5453\WP\FORMS\ROUTE.SW
City of Helena grd wtr (Corr. M) #90

DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING & COMPLIANCE DIVISION
Community Services Bureau
Waste Management Section
MARC RACICOT, GOVERNOR

STATE OF MONTANA

Phone: (406)444-4400
Fax: (406)444-1374

Metcalf Building
1520 E Sixth Ave
PO Box 200901
Helena, MT 59620-0901

March 3, 1998

Ted Hill
City of Helena
316 North Park
Helena, Montana 59623

RE: CITY OF HELENA CLASS II LANDFILL (INACTIVE), LEWIS AND CLARK COUNTY - LICENSE NO. 90
GROUND WATER MONITORING - EFFECTIVENESS OF CORRECTIVE MEASURE

Dear Mr. Hill:

I understand that the landfill gas extraction system for the City of Helena Class II (inactive) Landfill is nearly operational. As we discussed in our meeting on July 29, 1997, in order to demonstrate the effectiveness of the gas extraction system on the remediation of the ground water, additional sampling will be necessary to evaluate gas extraction as a corrective measure at this site [ARM 17.50.710(7)(c)(ii)].

Several ground water monitoring wells that have equaled or exceeded standards need to be sampled quarterly for the list of volatile organic compounds on Table 1 (ARM 17.50.708). In our July 1997 meeting the following wells were selected to be sampled quarterly for VOCs: 83-7, MPC-1, EPA-1, and HL-90-1.

If you have any questions on this matter, please contact me. My direct phone line is 444-0538.

Sincerely,

Pat Potts
Environmental Specialist - Solid Waste Regulatory Program

cc: Steve Downs, Hydrometrics, Inc.
Kim Milburn, City of Helena
Vivian Drake, City-County Bldg.
City of Helena Manager

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